A SUMMARY OF OCCUPATIONAL ILLNESSES AND INJURIES DUE TO COINCIDENTAL PESTICIDE EXPOSURE AS REPORTED BY PHYSICIANS IN CALIFORNIA IN 1986

By

Keith T. Maddy, Chief/Staff Toxicologist
Dana D. Meinders, Associate Pesticide Review Scientist

HS-1440 September 26, 1988

California Department of Food and Agriculture
Division of Pest Management, Environmental
Protection and Worker Safety
Worker Health and Safety Branch
1220 N Street, P.O. Box 942871
Sacramento, California 94271-0001

SUMMARY

In 1986, 126 cases of occupational pesticide related illness or injury were reported by California physicians for the "Coincidental" classification. Included in this class are persons exposed to application-strength pesticides who are not directly involved in a pesticide handling activity. Exposure in this classification primarily results from misapplication drift or from spills or equipment failures during handling, cleaning or repairing of application equipment or pesticide containers. Of the 126 cases this year, 91 were systemic illnesses, 10 were eye injuries, 20 were skin injuries and five were injuries that involved both skin and eyes. There were 12 days of hospitalization reported for the class and 94 total days lost from work for disability.

INTRODUCTION

Under Section 2950 of the California Health and Safety Code, each illness or injury that occurs in the state that is suspected of being pesticide-related is required to be reported by the attending physician to the local County Health Officer within 24 hours. In turn, the County Health Officer must immediately report the incident to the local County Agricultural Commissioner (CAC), and then within seven days to the California Department of Food and Agriculture (CDFA) and the California Department of Health Services. The incident is subsequently investigated by the local CAC staff. The resulting investigation report is then submitted to the CDFA Worker Health and Safety Branch for evaluation.

Based on input from physicians, CAC staff, and available toxicological and medical data, the Worker Health and Safety Branch evaluates each case to determine the relationship between the exposure incident and the symptoms described. The classifications used for this relationship are "Definite", "Probable", "Possible" and "Unlikely". Those cases considered to be pesticide-related are further classified according to work activity at the time of exposure and the type of illness or injury experienced.

There were 2,099 reports of illness or injury received from physicians in 1986 that were suspected to be caused by exposure to pesticides. Of these, 1,065 were occupational exposures which had adequate information available to determine some degree of likelihood of being pesticide-related. The remainder had insufficient information, were non-occupational exposures or were determined after investigation to be unrelated to pesticide exposure.

The "Coincidental" illness classification includes illnesses and injuries incurred by persons exposed to an application-strength dilution of a pesticide compound that are not directly involved in a pesticide handling activity such as mixing, loading or application. This classification includes persons exposed to spray drift, persons exposed by spills or other similar accidents and persons exposed while cleaning or repairing application related equipment.

There were 126 cases classified in 1986 as "Coincidental" of which 91 were systemic illnesses, 10 were eye injuries, 20 were skin injuries and five involved both skin and eye injury. The classification included six cases with hospitalization for a total of 12 hospital days. Twenty six cases were reported to have resulted in 94 days lost from work due to disability.

NOTABLE CASES

Eighty six cases, or sixty eight percent of all cases reported for this category involved exposure to drift. These cases are roughly equally divided into accidental exposure and exposure caused by true human error. In the latter cases, sufficient evidence of an error existed so that fault could be attributed.

After working for one and one-half days cultivating behind a spray rig applying Kelthane, a tractor driver became ill and was admitted to a hospital overnight for observation. He was released the following day and told he could report back to work after lab tests which included

cholinesterase testing were negative. When the worker was released from the hospital, he was feeling fine.

Near Salinas, a driver of a fertilizer rig became ill after working in a field adjacent to one that was being treated with mevinphos, endosulfan and fenvalerate. He had started work in the field thinking that the application was finished when it was not. He stated he could smell the pesticide being used. He became ill with flu-like symptoms that evening and ultimately missed three days work.

A city gardener working in a public park in San Joaquin County developed headache, nausea and weakness after noticing drift from a dimethoate and dicofol application to watermelons nearby. While other workers were in the park that did not become ill, the subject gardener was at the end closest to the application and believed the odor was stronger there.

A supervisor of spraying that was in training became ill after walking through the spray of an air blast spray rig applying dimethoate. Several previous careless actions had resulted in verbal reprimands. Upon visiting his medical supervisor, it was found that his cholinesterase enzyme activity had dropped by 30 percent. He was removed from his position and assumed other duties in the company's packing shed.

Two CalTrans workers in Yolo County became ill with various symptoms after they were drifted upon by a aerial applicator. The application included parathion, endosulfan and sulfur. The pilot and flaggers denied the possibility of any drift. The workers quickly showered and changed clothes but symptoms still occurred. The symptoms resolved after the workers saw physicians, although no tests were conducted and no treatment was given.

In Tulare County, 14 members of a picking crew of 63 became ill with nausea, vomiting and dizziness after being sprayed while picking grapes in a vineyard bordered by a citrus grove being treated with methidathion. The sick workers were taken to a local hospital. The emergency room physician diagnosed pesticide poisoning although there was no lowering of cholinesterase values. The owners of the citrus grove were issued several violations.

Eleven bank employees in Yolo County complained of an odor from the drift of a methamidophos application being made to an adjacent field. Seven of them became ill with headaches, difficulty breathing or sore throat and eyes. Two employees saw a physician. Methamidophos was found in the air filters of the cooling system of the bank building the employees had been working in.

Approximately 23 percent (29 cases) of the illnesses in this classification resulted from equipment failure or human error during the cleaning, repairing or other handling of application equipment. Additional cases resulted from crushing or burning pesticide containers.

A service man for a commercial applicator in Kern county developed a second degree chemical burn on his right foot three days after spilling dichloropropene onto his boot while moving hoses in the service yard. The worker had washed off his boots immediately after the spill and still developed the burn.

A worker was drenched on his upper body with cacodylic acid when he attempted to clear some nozzles on a ground spray rig and the driver turned on the spray valve instead of raising the boom. He developed an itching rash on both forearms even though he claimed to be using long sleeve coveralls and rubber gloves. He lost two days from work.

In Riverside County, a field worker became ill after cleaning a tractor contaminated with carbofuran. He was hospitalized for a total of three days. He had not been wearing protective clothing or equipment and was not made aware of the potential for danger. The relationship decided for this case was definite for pesticide exposure.

A flagger/mechanic was working on an aircraft's pump when a hose failed splashing him in the face and upper body with methomyl. He washed the material off the best he could and returned to work. He soon felt ill and went home where he collapsed. He was immediately taken to the hospital where he remained for four days.

A laborer in Merced County lost two days from work after inhaling smoke from burning sulfur bags.

In a Madera County, a worker was cleaning equipment previously used for application of propargite and cryolite. Water from the steam cleaner he was using splashed back onto his chest from the contamination equipment and he later developed a rash. The pesticide causal relationship for this case was judged definite. The employee lost five days from work.

DISCUSSION AND CONCLUSIONS

The attached tables summarize data for this years reported illnesses. Table 1 compares this years illness type breakdown with data for the past five years. The number of illnesses this year is the lowest it has been since 1982. Table 2 shows illness or injury type by causal pesticide or combination. Obvious problem chemicals are malathion, methidathion and sulfur, although their prevalence is probably due to their widespread use.

The greatest single cause of illnesses in the "Coincidental" classification is the uncontrolled application of pesticides under agricultural use that results in drift to unprotected individuals in neighboring locations. This most often involves aerial application but is not exclusive of other application methods. What is needed to reduce this portion of the pesticide illnesses that occur each year is a more responsible attitude on the part of a small minority of application personnel and employers which can be achieved through increased education and resulting awareness of the problem. Also, as stated in last year's report, better communication between application crews and individuals involved in activities in close proximity needs to be stressed.

Similarly, greater caution and the use of proper protective clothing and equipment while handling pesticide containers or cleaning or repairing pesticide application equipment can reduce another large portion of the illnesses in the class.

REFERENCES

1. Maddy, K.T. and D. Alcoser: Summary of Reported Occupational Illnesses Due to Coincidental Exposure to Pesticides as Reported by Physicians in California in 1982. HS-1126. California Department of Food and Agriculture, Worker Health and Safety Branch. 1983.

2. Maddy, K.T. and D. Alcoser: Summary of Reported Occupational Illnesses Due to "Coincidental Exposure" to Pesticides as Reported by Physicians in California in 1983. HS-1190. CDFA, WH&S, 1984.

3. Alcoser, D.: Summary of Reported Occupational Illnesses and Injuries Due to Coincidental Exposure to Pesticides as Reported by Physicians in California in 1984. HS-1315. CDFA, WH&S. 1985.

4. Alcoser, D.: Summary of Reported Occupational Illnesses and Injuries Due to Coincidental Exposure to Pesticides as Reported by Physicians in California in 1985. HS-1373. CDFA, WH&S. 1986.

Table 1

Occupational Illnesses and Injuries Reported for the Coincidental Classification by Illness Type for 1982 Through 1986

Type of Illness	1982	1983	1984	1985	1986	Five Year Total
Systemic	112	103	87	172	**91**	565
Eye	44	19	25	25	**10**	123
Skin	25	20	17	23	**20**	105
Eye/Skin	3	1	2	4	5	15
Total	184	143	131	224	**126**	808

Table 2

Occupational Illnesses and Injuries Due to Coincidental Exposure as Reported by Causal Pesticide

Pesticide	Illness/Injury Type				Total Cases
	Systemic	Eye	Skin	Eye/Skin	
Acephate	1	1	0	0	2
Acrolein	1	0	0	2	3
Bensulide	0	0	1	0	1
Cacodylic Acid	0	0	1	0	1
Captan	1	0	0	0	1
Carbofuran	2	0	0	0	2
Chlorpyrifos	3	0	0	1	4
Chlorpyrifos, Pyrethrins, Piperonyl Butoxide	1	0	1	0	2
Cypermethrin, Profenofos	2	0	0	0	2
DCNA	2	0	0	0	2
Diazinon	1	1	0	0	2
1,3-Dichloropropene	1	0	1	1	3
Dicofol	1	0	0	0	1
Dicofol, Naled, Sulfur	4	0	0	0	4
Dienochlor	0	1	0	0	1
Dimethoate	3	0	1	0	4
Dinitrophenol	0	0	1	0	1
Endosulfan, Parathion, Sulfur	2	0	0	0	2
Eptam	0	1	0	0	1
Fluvalinate	1	0	0	0	1
Fluvalinate, Triforine	2	0	0	0	2
Glyphosate	2	1	1	0	4
Imazalil	1	0	0	0	1
Malathion	8	1	0	0	9
Manzeb	1	0	0	0	1
Metam-Sodium	0	1	1	0	2
Methamidophos	1	0	0	0	1
Methidathion	15	0	0	0	15
Methomyl	1	0	1	0	2
Methyl Bromide	0	1	0	0	1
Mevinphos	1	0	0	0	1
Nicotine	1	0	0	0	1
Parathion	2	0	0	0	2
Pentachlorophenol	1	0	1	0	2
Petroleum Distillates	0	0	1	0	1
Potassium Metabisulfite	2	0	0	0	2
Propargite	0	1	1	0	2
Propetamphos	1	0	0	0	1
Pyrethrins, Piperonyl Butoxide	1	0	0	0	1
Sulfur	7	0	2	0	9
Triadimefon	0	1	0	0	1
Ziram	0	0	1	0	1
Insecticide Combinations	7	0	0	0	7
Herbicide Combinations	3	0	1	1	5
Miscellaneous Combinations	5	0	1	0	6
Unknown	3	0	3	0	6
TOTAL	91	10	20	5	126